

30 May 2011

Ref: 10530/3983

De Witt Consulting
P.O. Box 850
Charlestown NSW 2290

Attn: David Humhpris

RE: PROPOSED MOSQUE – CROUDACE ROAD ELMORE VALE

This letter addresses points raised in relation to acoustics in the “minutes of the Hunter and Central Coast Joint Regional Planning Panel meeting held at Newcastle City Hall on Thursday, 05 May at 5.30pm” (JRPP).

Specifically, in relation to acoustics, the JRPP concluded that determination of the Development Application be deferred to enable;

“The applicant to provide additional information in regarding noise impacts and issues in the independent acoustic consultant report by SLR including;

a) Addressing cumulative noise impacts, including under non-neutral weather conditions, and

b) Noise impacts from the eastern ramp to the upper level car park.”

a) In the “Summary of Operational Noise Assessment” of the Proposed Mosque and Community Facilities Croudace Road, Elmore Vale Peer Review – Acoustics, Report number 630.10171, 18 April 2011 by SLR Consulting Australia Pty Ltd (SLR report) it is concluded that;

“The Acoustic Report provides no assessment of the impact of noise sources occurring simultaneously under typical operational scenarios rather, individual noise sources from the proposed development are applied against the relevant criteria in isolation of other site noise sources. It is therefore, recommended that additional information be supplied regarding the cumulative noise contribution of the site under likely operational scenarios.”

The proposed operation of the mosque is such that there may be occasions when more than one noise source is occurring simultaneously. As indicated in the SLR report the worst case for noise generation will occur before and after the Friday Jumaa Prayer. During this time people will be arriving at the car park and moving into the mosque. The noise may therefore be from the driveway,

car park, courtyard at the mosque and mechanical plant. There will be use of the hall, other than for quiet individual prayers and readings. The noise from all of these sources has been determined (using all sound levels and assumptions from the original assessment by Spectrum Acoustics) at each of the five representative residential receiver points shown in **Figure 1**. To look at an absolute worst case the noise from the prayers session in the mosque has also been considered to be operating at the same time as the other noises detailed above.

It should be noted that, pursuant to Islamic customs, no other facilities on the site (e.g. the community hall, etc.) are allowed to be used during prayer times. There will be no overlap of use of any ancillary facilities and, consequently, the maximum number of people using the Mosque will represent the maximum number of people on site at any one time.

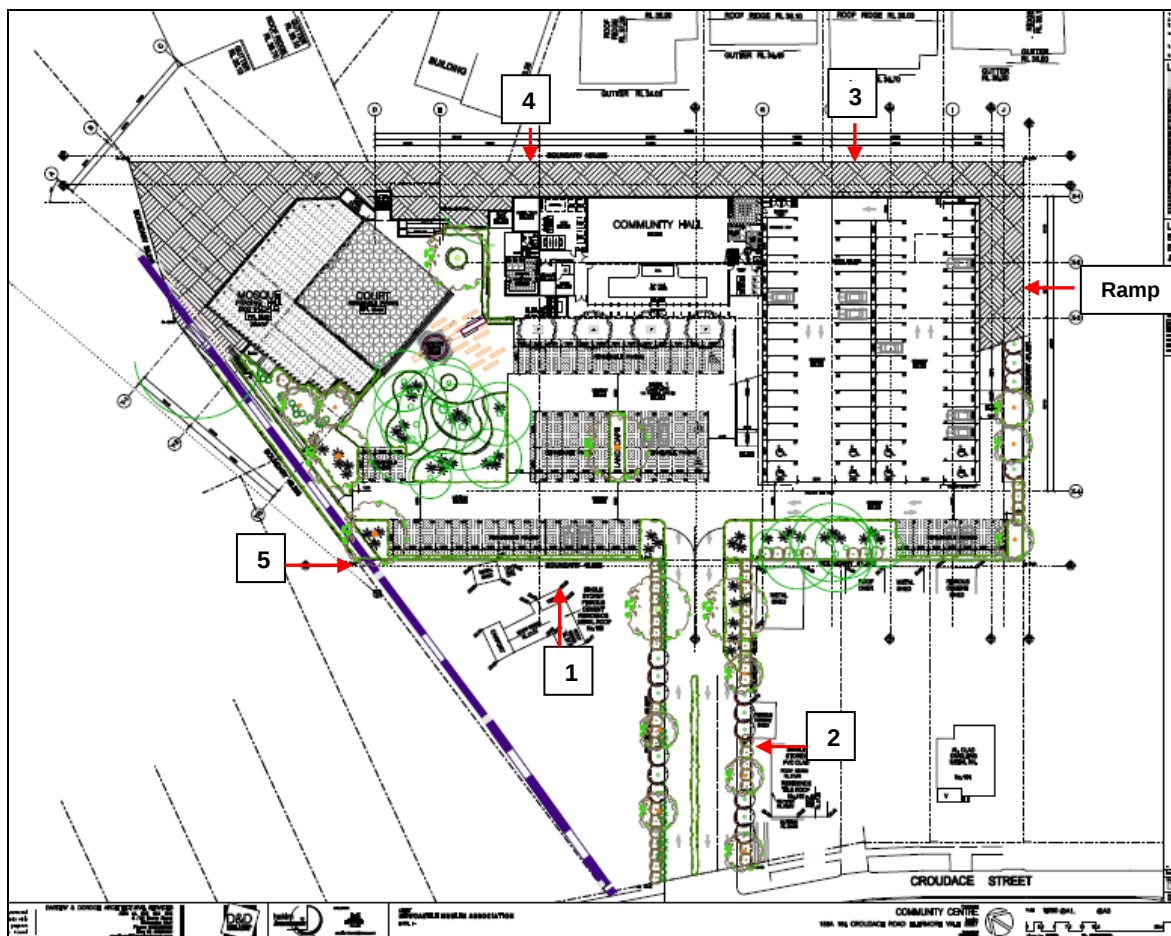


Figure 1 – Receiver Locations

For **Receiver 1** the calculation of noise from the driveway during the day is shown in **Table 1**.

TABLE 1 RECEIVER 1 NOISE (Leq (15 min)) – DRIVEWAY (DAY)	
Item	dB(A)
Sound Power Level (Leq)	84
Distance Loss to Receiver (35 m)	-39
Barrier Effects (2.1 m fence)	-13
Received Noise	32
Criterion (day)	47

For Receiver 1 the calculation of car park noise during the day is shown in **Table 2**. Car park notations as per the figure in **Appendix A**.

TABLE 2 CALCULATED SPL FROM CAR PARK Leq (15 min) (DAY)	
Car Park Number	Receiver 1
1	37.5
2	37.5
3	27.6
4	27.6
5	23.2
6	23.2
7	17.3
8	20.4
9	18.1
10	17.6
11	16.8
12	18.1
13	16.3
14	15.8
15	15.4
16	22.6
17	19.7
18	18.2
19	17.6
20	17.3
21	16.3
Total	41
Criterion	47

For Receiver 1 the calculation of noise from the courtyard during the day is shown in **Table 3**.

TABLE 3 RECEIVER 1 NOISE (Leq (15 min)) – COURTYARD (DAY)	
Item	dB(A)
Sound Power Level (Leq)	92
Distance Loss to Receiver (50 m)	-42
Barrier Effects (2.1 m fence)	-10
Received Noise	40
Criterion (day)	47

The mechanical plant for the mosque will be located in a plant room at lower ground level at the eastern side of the main mosque building. Noise from the plant will be effectively acoustically screened by the structure of the building and the received noise will be negligible.

For Receiver 1 the calculation of noise from the mosque during the day is shown in **Table 4**.

TABLE 4 CALCULATED SPL AT NEAREST RECEIVER 1 – SERMON IN MOSQUE Leq (15 min) (DAY)									
Item	dB(A)	Octave Band Centre Frequency, Hz							
		63	125	250	500	1k	2k	4k	8k
SPL at inside of wall (Leq 15 min)	80	35	38	64	72	75	76	72	56
STL Stud Wall		20	22	25	29	33	31	38	36
Exterior SPL		15	16	39	43	42	45	34	20
SPL @ receiver Leq (15 min)	24								
Criterion (day) Leq (15 min)	47								

The worst case combined noise during the day at Receiver 1 is shown below in **Table 5**.

TABLE 5 RECEIVER 1 NOISE (Leq (15 min)) – COMBINED NOISE (DAY)	
Item	dB(A)
Driveway	32
Car Park	41
Courtyard	40
Mechanical Plant	n/a
Mosque	24
Total Received Noise	44
Criterion (day)	47

Similar calculations to those shown above were carried out for the other receivers shown in Figure 1. The results of the calculations are shown below in **Table 6**.

TABLE 6				
RECEIVER 1 NOISE (Leq (15 min)) – COMBINED NOISE (DAY)				
Item	Receiver 2	Receiver 3	Receiver 4	Receiver 5
Driveway	44	35	35	30
Car Park	32	35	30	37
Courtyard	34	32	42	29
Mechanical Plant	n/a	<20	34	<20
Mosque	<20	<20	43	40
Total Received Noise	45	39	46	42
Criterion (day)	47	47	47	47

The results shown in Tables 1 to 6 show that, under the assessed worst case conditions during the day, the combined noise from all phases of the operation of the mosque will not exceed the adopted day time noise criterion at any of the representative receiver locations.

The results in Tables 1 to 6 represent the noise levels around the Friday Jumaa prayer. At other times during the evening and night there will be far fewer people in attendance at the mosque. For the Isha prayer during the evening, for example, there may be between 25 and 40 people in attendance.

For the calculation of potential cumulative noise impacts during the evening it was assumed that 15 cars used the driveway and car park in a 15 minute during the evening before and after the Isha prayer. Similarly, up to ten people were assumed to be conversing in the courtyard whilst entering or exiting the mosque. During the evening and night there will be no use of the amplification equipment inside the mosque, with resultant minimal noise emissions.

For **Receiver 1** the calculation of noise from the driveway during the evening is shown in **Table 7**.

TABLE 7	
RECEIVER 1 NOISE (Leq (15 min)) – DRIVEWAY (EVENING)	
Item	dB(A)
Sound Power Level (Leq)	75
Distance Loss to Receiver (35 m)	-39
Barrier Effects (2.1 m fence)	-13
Received Noise	23
Criterion (day)	42

For Receiver 1 the calculation of car park noise during the evening is shown in **Table 8**. Note that during the evening it was considered that only car park blocks 1, 3 and 5 are to be used (based on 15 to 20 cars).

TABLE 8 CALCULATED SPL FROM CAR PARK Leq (15 min) (EVENING)	
Car Park Number	Receiver 1
1	37.5
3	27.6
5	23.2
Total	38
Criterion	42

For Receiver 1 the calculation of noise from the courtyard during the evening is shown in **Table 9**.

TABLE 9 RECEIVER 1 NOISE (Leq (15 min)) – COURTYARD (EVENING)	
Item	dB(A)
Sound Power Level (Leq) (10 people)	82
Distance Loss to Receiver (50 m)	-42
Barrier Effects (2.1 m fence)	-10
Received Noise	30
Criterion (day)	42

The mechanical plant for the mosque will be located in a plant room at lower ground level at the eastern side of the main mosque building. Noise from the plant will be effectively acoustically screened by the structure of the building and the received noise will be negligible.

The worst case combined noise during the evening at Receiver 1 is shown below in **Table 10**.

TABLE 10 RECEIVER 1 NOISE (Leq (15 min)) – COMBINED NOISE (EVENING)	
Item	dB(A)
Driveway	23
Car Park	38
Courtyard	30
Mechanical Plant	n/a
Total Received Noise	39
Criterion (Evening/Night))	42/40

Similar calculations to those shown above, for evening, were carried out for the other receivers shown in Figure 1. The results of the calculations are shown below in **Table 11**.

TABLE 11				
RECEIVER 1 NOISE (Leq (15 min)) – COMBINED NOISE (EVENING)				
Item	Receiver 2	Receiver 3	Receiver 4	Receiver 5
Driveway	35	26	26	21
Car Park	20	<10	<10	36
Courtyard	24	22	32	19
Mechanical Plant	n/a	<20	34	<20
Total Received Noise	35	27	36	36
Criterion (Evening/Night)	42/40	42/40	42/40	42/40

The results shown in Tables 7 to 11 show that, under the assessed worst case conditions during the evening, the combined noise from all phases of the operation of the mosque will not exceed the adopted evening time noise criterion at any of the representative receiver locations. The results also show there will be no exceedance of the night time criterion.

Whilst it not specifically stated in the original assessment it is generally accepted that differences in atmospheric conditions make little significant difference to received noise at receivers within up to 200 to 300m from a noise source.

The SLR Report stated “Noise levels in the Acoustic Report (Spectrum Acoustics report) are predicted for calm conditions only. There is no justification in the report as to why meteorological conditions have not been considered. That being said SLR Consulting consider that due to the proximity of the proposed development to the nearest potentially affected residential receivers meteorological conditions would not significantly impact on the predicted noise levels presented.”

As a result of the above discussions it is not considered warranted to carry out further assessment of noise under non-neutral atmospheric conditions.

b) The upper level car park will only be used during the day. It will be closed off at all other times. **Figure 2** shows a cross section through the site which shows that the eastern ramp to the upper level car park rises in cut from existing ground level to the proposed FFL of the car park.

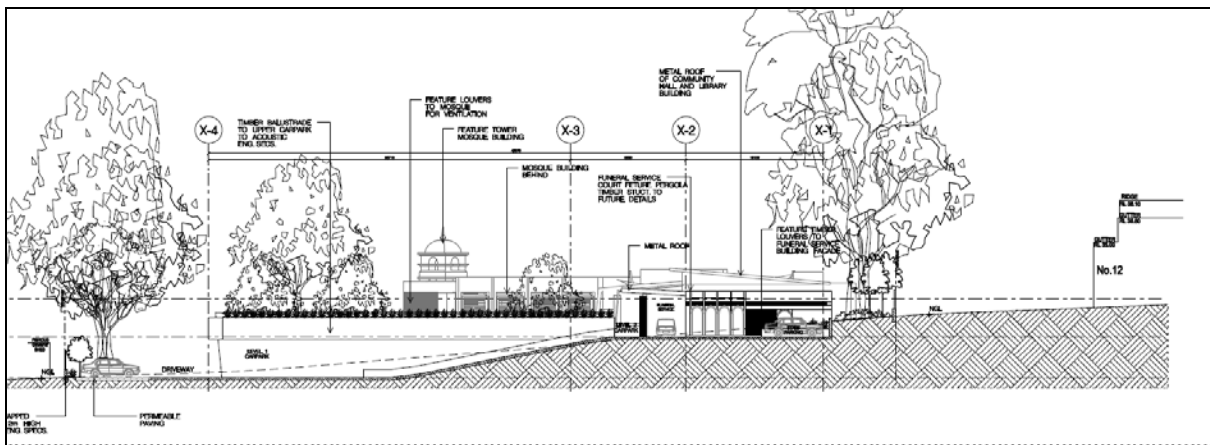


Figure 2 – Site Cross Section

There will be a 2.1m high acoustic barrier along the boundary of the site adjacent to the ramp. Where the ramp rises above natural ground level then there will be a 2.1m high acoustic barrier at the boundary of the nearest residence.

Table 12 shows a calculation of noise impacts during the day from cars using of the eastern ramp. The calculation has been made to the most potentially affected receiver location marked as ramp on Figure 1.

To consider a worst case it was assumed that 25 vehicles used the ramp in a single 15 minute period (there are 42 parking spaces on the upper level and two access ramps).

The ramp is approximately 35m long (although part of this is in cut). A vehicle travelling at 10 kph will travel this distance in 12.5 seconds. Assuming a sound power level of 87 dB(A) (an average of ten measurements made alongside a ramp in a Newcastle shopping centre), this equates to a level of 68 dB(A) Leq (15 min) for each car. For 25 cars this is a sound power level of 82 dB(A) Leq (15 min).

TABLE 12	
RECEIVED NOISE (Leq (15 min)) – EASTERN RAMP (DAY)	
Item	dB(A)
Sound Power Level (Leq)	82
Distance Loss to Receiver (5 m)	-22
Barrier Effects (2.1 m fence)	-14
Received Noise	46
Criterion (day)	47

The results in Table 12 show that, under the assessed conditions there will be no exceedance of the day time noise criterion as a result of vehicles using eastern ramp to the upper level car park.

To ensure there are no cumulative noise impacts, **Table 13** shows the combined noise at the Ramp receiver as a result of the day time operation of the site.

TABLE 13	
RECEIVER 1 NOISE (Leq (15 min)) – COMBINED NOISE (DAY)	
Item	dB(A)
Driveway	<20
Car Park (parks 16 to 21)	41
Courtyard	23
Mechanical Plant	n/a
Mosque	<20
Ramp	46
Total Received Noise	47
Criterion (day)	47

The results shown in Table 13 show that, under the assessed worst case conditions during the day, the combined noise from all phases of the operation of the mosque will not exceed the adopted day time noise criterion at the representative receiver location closest to the eastern ramp.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please do not hesitate to contact the undersigned.

Yours faithfully,

SPECTRUM ACOUSTICS PTY LIMITED



Ross Hodge

Acoustical Consultant

APPENDIX A

CAR PARK NOTATIONS

